

# BioDur<sup>®</sup> CCM Alloys



Excellent wear resistance, high-strength, corrosion-resistant alloys ideal for articulating applications where wear or fatigue properties are of major importance or where intricate high strength forgings are required.



**BioDur<sup>®</sup> CCM is a non-magnetic cobalt-chromium-molybdenum** alloy produced by vacuum induction melting (VIM) followed by electroslag remelting (ESR). The finished mill product is supplied in the annealed, hot worked, or warm worked condition.

**Micro-Melt<sup>®</sup> BioDur<sup>®</sup> CCM Plus<sup>®</sup> offers elevated carbon levels** to increase strength and stiffness and is ideal for high wear applications requiring higher strength.

**GADS Vitallium uses powder dispersion techniques** to increase fatigue strength to approximate 2x of standard CCM"



## KEY FEATURES

INDUSTRY NAME	CRS ALLOY NAME	PROPERTIES	APPLICATIONS
ASTM F1537 Alloy 1	BioDur <sup>®</sup> CCM	Good ductility	Aerospace bushing and bearings
		Excellent corrosion resistance	Medical implants needing wear + corrosion resistance
		Excellent wear resistance	
	Micro-Melt <sup>®</sup> BioDur <sup>®</sup> CCM	Smaller bar sizes utilize this alloy, drives enhanced homogeneity in the product and increased process-ability	Same as above, but higher toughness and consistency
	Micro-Melt <sup>®</sup> BioDur <sup>®</sup> CCM Low Nickel	Properties of BioDur CCM with minimized Ni additions	Same as above, but when Ni avoidance is preferred
N/A "1537 Alloy 1.5"	BioDur <sup>®</sup> CCM-MC	A medium carbon variant, officially as a subset of Alloy 2	CCM designed to be more compatible with additive manufacturing (AM) processes
ASTM F1537 Alloy 2	Micro-Melt <sup>®</sup> BioDur <sup>®</sup> CCM Plus <sup>®</sup>	Elevated carbon levels increase strength and stiffness	High wear applications requiring higher strength
	Micro-Melt <sup>®</sup> BioDur <sup>®</sup> CCM Plus <sup>®</sup> Low Nickel	Properties of higher strength BioDur CCM Plus with minimized Ni additions	Same as above, but when Ni avoidance is preferred
	Micro-Melt <sup>®</sup> BioDur <sup>®</sup> CCM Plus <sup>®</sup> Mod	Modified to have higher process-ability, formability, etc.	[Not offered, currently under redesign]
ASTM F1537 Alloy 3	GADS Vitallium	Uses powder blending techniques to gain dispersion strengthening	Used to increase fatigue strength to approximately 2x level of standard CCM

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